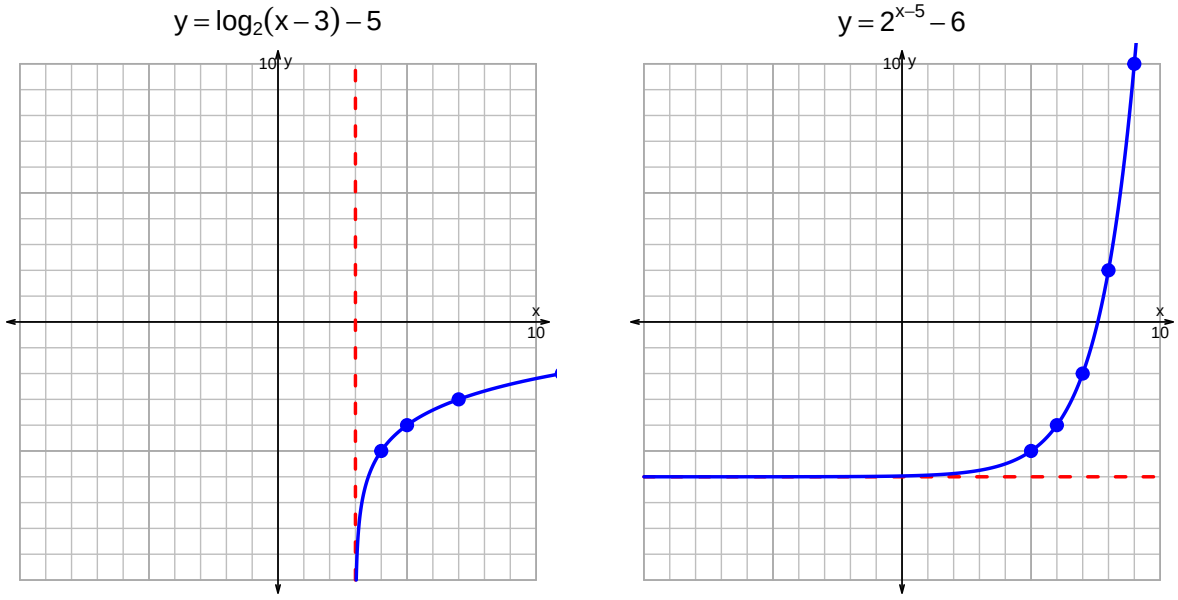
Name: Date:

S18QUIZ: EXP LOG (SLTN v231)

1. Graph $y = \log_2(x-3) - 5$ and $y = 2^{x-5} - 6$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-29 = \left(\frac{-7}{3}\right) \cdot 10^{5t/4}$$

Divide both sides by $\frac{-7}{3}$.

$$\frac{29 \cdot 3}{7} = 10^{5t/4}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{29 \cdot 3}{7}\right) = \frac{5t}{4}$$

Divide both sides by $\frac{5}{4}$.

$$\frac{4}{5} \cdot \log_{10}\left(\frac{29 \cdot 3}{7}\right) = t$$

Switch sides.

$$t = \frac{4}{5} \cdot \log_{10}\left(\frac{29 \cdot 3}{7}\right)$$

3. An exponential function $f(x) = 0.188 \cdot e^{1.24x}$ is graphed below on a semi-log plot.

a. Using the plot above, evaluate $f(2.8)$.

$$f(2.8) = 6$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{1.24} \cdot \ln\left(\frac{x}{0.188}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.07)$.

$$f^{-1}(0.07) = -0.8$$